

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

Drafting Basins (Interim)

(Number)

Code 712

DEFINITION

A drafting basin is a receptacle, such as a manhole, connected by means of a pipeline to a water source from which the local fire department can pump water.

PURPOSES

To provide a dependable, readily available source of water for fire suppression, regardless of the time of year.

CONDITIONS WHERE PRACTICE APPLIES

1. Where it is necessary to have a supply of water for fire suppression.
2. Where there is an available water source capable of supplying 250 gallons per minute for a continuous 2 hour period at any time of the year. Higher pumping rates may be required by local ordinances and fire departments. Most are designed to provide at least 1000 gallons of water per minute.
3. Where the static head does not exceed 12 feet with 10 feet of static head preferred.
4. Where the drafting basin is safely accessible at the pumping location via an all weather road.

CRITERIA

Federal, State and Local Laws

Design and construction activities shall comply with all federal, state, and local laws, rules, and regulations governing all activities in and along bodies of water or in relation to pollution abatement, health and safety. The owner or operator shall be responsible for securing all required permits or approvals and for performing in accordance with such laws and regulations.

Design

It is the intent of this standard not to repeat in detail but to comply with the National Fire Protection Association (NFPA) 1231, *Standard on Water Supplies for Suburban and Rural Fire Fighting*, specifically Appendix B, Water Supply.

The design criteria for drafting basins on which insurance premium discounts are based may be more stringent than those in NFPA 1231 or this standard. It shall be the responsibility of the landowner or operator to obtain and submit to the designer the required design criteria from the insurance company.

The drafting basin should be adjacent to an all weather road so that it is accessible to a pumper truck. The top of the basin shall be above the maximum elevation of the water in the impoundment. The top should be placed a few inches above ground so that surface water

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doesn't pond and freeze on it. A post or marker should be placed near the basin for identification.

The connecting pipe should be as straight as possible with a minimum number of bends and elbows. The pipe must be below the maximum frost penetration depth (20 inches along the south boundary and 52 inches along the northern boundary of Indiana).

Water Source

The water source should be available year round and be capable of supplying a minimum of 250 gallons per minute for a continuous 2 hour period. This rate requires 4,000 cubic feet of usable water. A flow rate of 1000 gpm requires 16,000 cubic feet of useable water. The 50-year drought and freeze conditions and other water uses are considered as unavailable water. In Indiana, the 50-year drought and freeze conditions in lakes and ponds may be estimated to be 4 feet below the normal pool for areas north of U.S. Hwy 40 and 3 feet below normal pool for areas south of U.S Hwy 40. Two feet of water should be provided below the intake for sediment accumulation and to reduce the risk of plugging.

Capacity

The connecting pipe size shall be large enough to deliver the required capacity to the drafting basin at the design drawdown depth. The minimum drawdown shall be 1 foot. The minimum pipeline diameter shall be 8 inches. The inlet screen opening area shall provide a minimum of 4 times the area of the pipe.

The NRCS Drafting Basin Design Worksheet IN-ENG-58D, along with the IN-ENG-58 Standard Drawing should be used to document the design computations.

Materials

The minimum pipe quality shall be Schedule 40, SDR 26, or SDR 35 PVC or equivalent.

The riser shall be precast concrete manholes that meets the requirements of INDOT Standard Specifications Section 720 or other manufactured manholes that are appropriate for the required

depth. The manhole shall have a minimum diameter of 36 inches.

Standard thermoplastic pipe designation code for PVC pipe shall be 1120 or 1220 and for ABS pipe shall be 1316 or 2112.

Plastic pipe shall conform to one of the following ASTM specifications:

D1785, Polyvinyl Chloride (PVC) Plastic Pipe, schedule 40, 80, and 120.

D2241, Polyvinyl Chloride (PVC) Pressure Rated Pipe (SDR Series).

D3034, Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings.

D1527, Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe, Schedule 40 and 80.

D2282, Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe (SDR-PR).

Pressure pipe fittings shall conform to the requirements of the following ASTM specifications:

D2464, Threaded Polyvinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 80.

D2466, Polyvinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 40.

D2467, Socket-Type Polyvinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 80.

D2468, Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe Fittings, Schedule 40.

D2672, Joints for IPS PVC Pipe Using Solvent Cement.

Solvents for solvent-welded pipe joints shall conform to the following ASTM specifications:

D2235, Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe Fittings.

D2564, Solvent Cements for Polyvinyl Chloride (PVC) Plastic Pipe Systems.

D2855, Making Solvent-Cemented Joints with Polyvinyl Chloride (PVC) Pipe and Fittings

Safety

The following items are to be considered when planning, constructing, and operating drafting basins:

1. Locate and notify all overhead and underground utility companies at least 2 working days prior to construction. They should be considered when planning the access.
2. Place drafting basins far enough away from the waters edge or steep banks to prevent hazardous situations during use or maintenance.
3. Shape pond banks to 2:1 or flatter to prevent undercutting.
4. Any excavated trench near a body of water has potential for saturation and unstable walls. Trench installations shall be in accordance with all OSHA regulations.
5. The installation technique in NFPA 1231, excavation from the manhole to the water source, is recommended. If trenching is to be done from the water source to the manhole, a soil plug between the water and the trench may be used to aid in keeping the trench dry.

CONSIDERATIONS

Drafting basins are intended to give local fire departments water supplies to fight fires. The end user is the fire department. It is necessary to involve them in the planning stages of these facilities. Ideally, a drafting basin should be installed during the initial construction of a pond.

Some sediment will be stirred up during construction. Most installations should be completed in a day and impacts should be minimal.

The water quantity in a given water source may be impacted depending on the volume of water available. A recreation area could be temporarily adversely affected. Impact on ground water quality and quantity will be negligible.

Due to sediment, debris, and low water problems, intakes in streams are not recommended. This should be treated as a special design consideration.

The landowner/user will be advised if wetlands will be affected and USDA-NRCS wetland policy will apply. All work planned shall be in compliance with General Manual Title 450-GM, Part 405, Subpart A, Compliance With Federal, State, and Local Laws and Regulations. If archaeological or historical properties are encountered, the USDA-NRCS policy in General Manual Title 420-GM, Part 401 shall be followed.

Consideration shall be given to the use of construction materials, grading practices, vegetation, and other site development elements that minimize visual impacts and maintain or complement existing landscape uses.

PLANS AND SPECIFICATIONS

Plans and specifications for installing drafting basins shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

NFPA 1231 suggests in detail how to operate and maintain drafting basins. The operation and maintenance plan for this system is the responsibility of the landowner and local fire department. Upon completion of the installation, the fire department shall make an initial pumper test of the system.

The maintenance schedule should be acceptable to both the landowner and the local fire department. It is strongly suggested that the limitations of the water source be discussed with the fire department and landowner and be included in the operation and maintenance plan.

The following items are included here to emphasize their importance.

1. Perform regular pump test and back flushing. Test should be done on at least an annual basis or as per NFPA recommendations.
2. Keep the drafting basin and all weather road clear of snow and debris and in good repair.
3. Keep trees and underbrush trimmed away from the drafting basin and all weather road.

